

REMARKS

Reconsideration of all grounds of objection and rejection, and allowance of all the claims are respectfully requested in light of the above amendments and the following remarks. Claims 1-27 remain pending herein, with claims 28, 29 being added.

Support for claim 28 is found at least on page 2, lines 28-33 and page 9, lines 28-30.

Support for claim 29 is found at page 8, lines 18-23 and is shown in Fig. 3, wherein, when the intermediate disk 15 is slowed by the braking member 13 with respect to the outer disks 14, the sliding clamping blocks 30 are made to slide along respective hollows 21, causing the clamping blocks 30 to clamp onto the bushing 18, to constrain the wheel 12 on the bushing 18 and determine the solid rotation of the shaft 11 and the wheel 12.

Claims 1, 5, 13 and 14 have been amended to overcome rejection under 35 U.S.C. §112, second paragraph.

Support for the amendment to claim 1 is found at least in the specification at page 2, lines 24-27 ("In a first and second condition of the device" meaning transmission device) and page 8, lines 4-9 ("The device 10 has three functioning conditions a first ...; a second ...; and a third condition ..."). The amendment to claim 1 is also supported in the original language of claim 1 ("characterised in that it is able to assume a first and second conditions of use) referring to the transmission device as "it". "The term "it" of claim 1 was inadvertently changed to "device" by a preliminary amendment when "it" actually referred to the transmission device.

I. Objection to the Drawings

The drawings are objected to because it is alleged in the Office Action that the recitation of a "fluid-dynamic type" braking member recited in claim 26 and a "magnetic or electromagnetic type braking member" recited in claim 27 must be shown or the features canceled from the claims.

Applicants have renamed fig. 1 as fig. 1a and added new figs. 1b and 1c showing a respective fluid-dynamic type braking member and/or a magnetic or electromagnetic type braking member.

Accordingly, the new drawings supporting claims 26 and 27 are attached and Applicant affirms that no new matter has been added.

Support for figs. 1b and 1c is found at claims 26 and 27 as well as in the specification, particularly on page 8, lines 9-13, which states that "Driving the braking member 13, in fact, determines the slowdown of the intermediate disk 15 with respect to the outer disks 14" The specification also states at page 13, lines 15-16 that "any braking member may be used" and this includes "mechanical, hydraulic, pneumatic, magnetic, electro-magnet or any other type".

Moreover, it comes within the normal knowledge of a person of ordinary skill in the art regarding how any of the above-described braking systems can brake or slow the rotation of a first rotary member with respect to a second rotary member.

II. Rejection under 35 U.S.C. §112, second paragraph

Claims 1-27 are rejected under 35 U.S.C. §112, second paragraph because claim 1 recited "said rotary member", which did not provide an indication as to whether the

claim was referring to the first rotary member or the second rotary member. In addition, several claims lacked antecedent basis (claims 4-6, 14, 16-19 and 21) regarding the phrase "said second component". Finally, claim 13 referred to "sliding clamping means" instead of "said sliding clamping blocks". Claim 14 had a similar recitation as claim 13.

Claims 1, 3, 5, 13 and 14 have been amended to overcome the rejections under §112, second paragraph.

The initial paragraph of the Remarks provides support for the change made to claim 1 to overcome this ground of rejection.

Reconsideration and withdrawal of this ground of rejection are respectfully requested.

III. Rejection under 35 U.S.C. §102(b)

Claims 1-12, 14, and 16-27 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by U.S. Patent No. 3,300,002 to Roper (hereinafter "Roper '002"). Applicant respectfully submits this ground of rejection is traversed for the reasons indicated herein below.

Roper '002 discloses a differential device for the wheels of a vehicle, which substantially comprises a coupling (40) made of a first coupling (41) able to rotate with a first shaft (44) and of a second coupling (42) able to rotate with a second shaft (35).

More precisely,

"the coupling 40 permits the shaft member 35 to 'free wheel' with respect to the drive mechanism in the transfer box 18 and the shaft member 21... . However, upon rotation of the shaft 21 relative to the shaft 35, as by slipping of the drive wheels 25, 26, the coupling functions to drivingly

connect the shaft 35 to the drive mechanism of the transfer box 18 to thus positively drive the shaft 35 and the auxiliary wheels 30, 31 at the same time that the drive wheels 25, 26 are being driven..." (col. 4, lines 5-14).

However, the shaft 35 is connected to the differential drive mechanism 33 which drives the front axle 32 to make the front wheels 30, 31 rotate, and the shaft 21 is connected to the differential drive mechanism 23 which drives the rear axle 24 to make the rear wheels 25, 26 rotate. Thus, it is clear that the two shafts 21, 35 rotate always in the same direction (and at the same speed - please see col. 4, lines 3-4), because all the four wheels of the vehicle 10 must obviously rotate in the same direction. Moreover, under normal driving conditions, the four wheels 25, 26, 30 and 31 rotate at the same speed (See col. 3, lines 70-72).

Thus, Roper '002 discloses the coupling 40 acts when there is a slipping or a loss in traction of the rear (drive) wheels 25,26 (col. 3, lines 67-68) to directly connect the front (auxiliary) wheels 30, 31 to the transfer box mechanism, 18, "thus rendering the vehicle automatically a four-wheel drive vehicle" (col. 4, lines 30,31).

In other words, the coupling 40 allows to selectively (but not thanks to a manual and/or external command or control, as explained in the following) connect or disconnect the rear axle to the front axle of a vehicle to obtain a condition of four-wheel traction if there is a situation of slipping or loss of a traction of the drive (rear) wheels of the vehicle.

However, Roper '002 also discloses that "[U]nder normal condition, the coupling 40 permits the shaft member 35 to 'free wheel' with respect to the drive mechanism in the transfer box 18 and the shaft member 21..." (col. 4, lines 5-9).

The condition of "free wheel", as a person of ordinary skill in the art would understand, refers to a condition in which the shaft member 32 can rotate independently from the shaft member 21, if not engaged with it, however always in the same direction because it is clear that the wheels 30,31 cannot rotate in a different direction than the wheels 25,26.

The operation of the device of Roper '002 is disclosed in col. 7, lines 24-58. In particular, Roper '002 discloses:

"[W]hen the rear drive wheels 25, 26 slip, the shaft member 44 and coupling member 41 connected therewith continues to rotate at the speed at which they are driven. However, the auxiliary or front wheels 30, 31 are slowed relative to the rear wheels, and the coupling member 42 is thus slowed relative to the coupling member 41. When the differential speed or slip ... is of a predeterminate magnitude, the viscous drive coupling 110 causes ... wedging engagement of the rollers 92 with the surfaces 77, 64 respectively, to positively drive the front wheels of the vehicle....

It should be apparent that the coupling 40 operates only after a predetermined amount of slipping of the rear wheels occurs. Thus, the coupling 40 ...rather engages only in response to a predetermined differential in speed between the input and output coupling members. Moreover, the coupling does not operate to drive the front wheels of the vehicle when the vehicle is moving downhill and being braked by the engine unless the rear wheels slip.

From the above passage of Roper '002, a person of ordinary skill in the art would glean from the reference that:

(i) in Roper '002 the two rotating elements selectively engaged to rotate together always rotating in the same direction, and it is not a possible condition of use in which

one rotating element rotates in one direction and the other rotating element rotates in the opposite direction;

(ii) in Roper '002 the mutual engagement between the two rotating elements occurs only when and only if the difference of speed between the rear and the front wheels reaches a predetermined value. In every case, there is a delay between the reason which determines the braking or slowing of one rotating element (i.e. the slippage of the driving wheels) and the moment of the mutual engagement which makes the two rotating elements rotate together; and

(iii) in Roper '002 the mutual locking action between the two rotating elements occurs along an axial direction, (i.e. the "wedging engagement of the rollers 92 with the surfaces 77, 64, respectively, to positively drive the front wheels of the vehicle") with respect to the axis of rotation of the rotating elements.

In contrast to Roper '002, present claim 1 recites a transmission device having a first and a second condition of use wherein "said first rotary member is able to rotate in the two directions independently from said second rotary member" (present claim 1, lines 6-7).

Moreover, the specification discusses this aspect in several passages including "a driven wheel can rotate freely in both directions with respect to a rotary member on which it is mounted" (specification at page 2, lines 7-9) and "In a first and in a second condition of use of the device according to the invention, the first rotary member is able to rotate in both directions independently from the second rotary member" (specification at page 2, lines 24-27).

To reiterate, all of the present claims are not anticipated and patentably distinguish over Roper '002 at least for the reason that the device disclosed in Roper '002 has all the elements rotating in the same direction (always) and since all the rotating elements are connected by the transmission shafts 21, 35, from which the rear and front wheels rotate. In Roper '002 there can be no independent rotation in different directions.

It is well-settled law that to anticipate a claim under 35 U.S.C. §102(b), a cited reference must teach every element recited in a rejected claim (see MPEP 2131, Anticipation). In the present case, Roper '002 fails to disclose all of the recited elements of present claim 1, and by its very construction Roper '002 could not operate with a first rotary member rotatable in two directions independently from a second rotary member. Nor would Roper '002 disclose, suggest, or motivate an artisan with a teaching that is contrary to its operation.

Applicant respectfully submits all of the pending claims are allowable at least for dependence from claim 1, which is submitted to be allowable for the reasons previously discussed, and because the claims have an independent basis for patentability.

For example, in new claim 28, when the breaking element is made to act on the first rotary member, the relative clamping means are instantaneously arranged in their constraint position wherein they constrain the second rotary member (specification at page 2, lines 28-33), in order that the two rotary members 11, 12 are made to rotate solidly together (page 10, lines 25-27). In the present claimed invention there is no delay in the reciprocal blocking of the two rotating elements, and there is no need to wait up to the moment that a specified condition occurs, as happens in Roper '002 in which only if

the slippage between the rear and the front wheels reaches a predetermined amount are the two elements blocked together.

In the presently claimed invention, any external force can act on the braking element (13), in any circumstance and in any moment, to render by an appropriate external command, the two rotating elements solid with each other.

In addition, new claim 29 independently distinguishes from, as well as further distinguishes from, Roper '002, because the sliding clamping blocks (the constraint means) act radially with respect to the longitudinal axis of the first rotary element, contrary to the wedging rolls which act axially as disclosed in the patent to Roper '002.

For example, Fig. 3 of the present application shows the intermediate disk 15 is slowed by the braking member 13 with respect to the outer disks 14, and the sliding clamping blocks 30 are made to slide along the respective hollows 21, causing the clamping blocks 30 to clamp on the bushing 18, to constrain the wheel 12 on the bushing 18 and determining the solid rotation of the shaft 11 and the wheel 12.

For all of the above reasons, it is respectfully submitted that none of the pending claims are anticipated under 35 U.S.C. §102(b) by Roper '002. Reconsideration and withdrawal of this ground of rejection are respectfully requested.

IV. Rejection under 35 U.S.C. §103(a)

Claims 13 and 15 stand rejected under 35 U.S.C. §103(a) as being obvious over Roper '002 in view of Baker et al. (U.S. Patent 5,927,455, hereinafter "Baker").

Applicant respectfully traverses this ground of rejection for the reasons indicated above under Section III. As asserted above, base claim 1 is submitted to be patentable,

and claims 13 and 15 are patentable at least for their dependency on an allowable claim.
Baker does not make up for the above-noted deficiencies of Roper '002.

V. Conclusion

In view of the above, it is respectfully submitted that all objections and rejections are overcome. Thus, a Notice of Allowance is respectfully requested.

Respectfully submitted,

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ADDENDUM:

REPLACEMENT SHEET fig. 1a (replaces fig. 1)

Two (2) NEW SHEETS, figs. 1b and 1c